ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

Owner of the Declaration	Rudolf Hensel GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-RHG-20210126-IAA1-EN
Issue date	05/11/2021
Valid to	04/10/2026

HENSOTHERM® 490 KS
Rudolf Hensel GmbH

Institut Bauen und Umwelt e.V.

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green product
HENSEL

1. General Information

Rudolf Hensel GmbH	HENSOTHERM® 490 KS
Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the declaration** Rudolf Hensel GmbH Lauenburger Landstraße 11 21039 Börnsen
Declaration number EPD-RHG-20210126-IAA1-EN	**Declared product / declared unit** The declared product is HENSOTHERM® 490 KS. The declared unit involves 1 kilogram of the product. The packaging is included in the calculation
This declaration is based on the product category rules: Coatings with organic binders, 09.2017 (PCR checked and approved by the SVR)	**Scope:** This document refers to HENSOTHERM® 490 KS. Specific data from the Rudolf Hensel GmbH manufacturing plant in Börnsen was used for generating this LCA, which is based on data from 2020
Issue date 05/11/2021	The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.
Valid to 04/10/2026	**Verification** The standard *EN 15804* serves as the core PCR Independent verification of the declaration and data according to *ISO 14025:2010* ☐ internally ☒ externally
 Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	 Dr.-Ing. Wolfram Trinius (Independent verifier)
 Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))	

2. Product

2.1 Product description/Product definition

HENSOTHERM® 490 KS is an intumescent, water-based fire protection coating. This is a dispersion coating we manufacture ourselves with organic binders, water, mineral fillers, pigments, and additives. The coating is classified as low-emission, and contains no borates, plasticisers, halogens, formaldehydes or alkylphenol ethoxylates (APEO).

The fire protection coating is part of the Green Product Line of Rudolf Hensel GmbH.

Use of the product is subject to the respective national specifications at the place of use; in Germany, for example, the state building codes and the technical specifications based on these guidelines.

2.2 Application

Fire protection of steel components with H and I profiles (beams and columns) and hollow sections for a fire resistance duration of up to max. 330 minutes in accordance with *UL 263*.

In general, the complete coating system consists of a suitable anti-corrosion primer, the fire protection coating and if required a suitable topcoat.

Primers and topcoats are not components of this EPD.

HENSOTHERM® 490 KS is mainly used indoors and in open buildings. It is tested and approved in accordance with *UL 263* for General Interior Purpose applications. In addition and in accordance with *UL 263*, HENSOTHERM® 490 KS is approved for application under exterior environment exposure in combination with the HENSOTOP 2K PU cover coat. HENSOTHERM® 490 KS is not to be used on components that are constantly exposed to rain or moisture or aggressive gases for a longer period of time.

2.3 Technical Data

HENSOTHERM® 490 KS contains no hazardous substances exceeding the limit values of the *REACH Directive (EC/1907/2006), Annex XVII* and the *ECHA list of substances* of particularly high concern.

Construction data

Name	Value	Unit
Density	1.3 - 1.4	kg/m^3
Solids content	67 - 73	%
pH value	7.6 - 8.6	$-\log_{10}(a_{H+})$

Fire resistance rating UL 263	max. 330	min
Durability UL 263 without cover coat	General Interior Purpose	-
Durability UL 263 with HENSOTOP 2K PU cover coat	Exterior Environment Exposure	-
Total VOC ISO 11890-2	< 1g/l	Detection limit

HENSOTHERM® 490 KS is an emission-rated coating material. Sampling, testing and evaluation were effected in accordance with the latest versions of *AgBB, LEED v4, LEED v4.1, ISO 16000-3, ISO 16000-6, ISO 16000-9* and *ISO 16000-11*.

Germany: HENSOTHERM® 490 KS meets the requirements in accordance with the *Approval guidelines for health-related evaluation of indoor construction products*.

France: CMR substances: The tested product meets the requirements of the *French Directives DEVP0908633A of 30 April 2009* and *DEVP0910046A of 28 May 2009*.
VOC classification: HENSOTHERM® 490 KS was classified as VOC emission class A+. The recommended classification is based on the French regulation for labelling building products, wall panelling, floorings, paints, and lacquers with respect to their emissions of volatile contaminants, including those of 25 March 2011 (décret DEVL1101903D) and of 13 April 2011 (arrêté DEVL1104875A).

Belgium: HENSOTHERM® 490 KS meets the requirements of the *Royal Decree for determining the limit values for indoor emissions by construction products for certain intended types of use*.

USA: HENSOTHERM® 490 KS meets the requirements for VOC product emissions according to the California Department of Public Health (*CDPH*) Standard Method v1.1-2017 (California Specification 01350 (01/2017) and VOC content according to *ASTM D 2369-10* and South Coast Air Quality Management District (*SCAQMD*) Rule 1113.

Product performance values in terms of its characteristics following the relevant technical determination (no CE marking)

2.4 Delivery status

HENSOTHERM® 490 KS is a liquid coating material and is offered in plastic containers of different sizes from 6 − 30 kg.

2.5 Base materials/Ancillary materials

Name	Value	Unit
Polymer dispersion	15 - 25	% [m/m]
Pigment TiO2	5 - 15	% [m/m]
Ammonium polyphosphate	20 - 30	% [m/m]
Melamine	5 - 15	% [m/m]
Pentaerythritol	5 - 15	% [m/m]
Mineral fibres	< 3	% [m/m]
Dispersing agents	< 1	% [m/m]
Thixotropic agents	< 1	% [m/m]
In-can preservatives	< 0,25%	% [m/m]
Water	15 - 25	% [m/m]

The in-can preservatives contained in the product originate from the group of isothiazolinones and the group of bacteriostatic and disinfecting diols.

2.6 Manufacture

The manufacture of HENSOTHERM® 490 KS is effected in a fully automatically controlled dispersion unit. The dosage of the liquid raw materials is effected largely automatically; powders are dosed manually. The preliminary products required for manufacture are made available after an inspection of the incoming materials.
After the batches have been produced, an internal quality control is carried out. This comprises technical quality characteristics relating to paint and fire protection requirements.
Besides the internal factory control, official external monitoring takes place at regular intervals.

2.7 Environment and health during manufacturing

The preliminary products are stored in such a way that, as far as humanly possible, they cannot enter the environment.

With raw materials that are dosed automatically, direct contact between the workers and the preliminary products is avoided. When raw materials in powder form are dosed manually, direct contact with the raw material is reduced to a minimum. As well as adequately dimensioned extraction units, the workers have protective clothing and dust masks at their disposal. Suitable body protection equipment is also provided.

The production process is optimised in such a way that the parts of the unit can be cleaned in situ. Any cleaning water is redirected into the production process as production water. If this is not possible on account of a product change, the cleaning water is collected and thermally recycled.
All types of waste are sorted, stored and returned to the recycling process.

HENSOTHERM® 490 KS contains no hazardous substances exceeding the limit values of the *REACH Directive (EC/1907/2006), Annex XVII* and the *ECHA list of substances* subject to declaration.

2.8 Product processing/Installation

The product can be applied using brushes, rollers or sprays.
Details concerning surface pre-treatment, application requirements and drying behaviour can be seen in the current technical information sheet (see www.rudolf-hensel.de).

2.9 Packaging

The coating is filled in plastic containers made of polypropylene (PP), which are recycled by the customers returning the packaging. The plastic containers are packed on pallets for shipping and are protected with a shrink foil made of low-density polyethylene (LDPE).

2.10 Condition of use

This is an intumescent fire protection coating on an aqueous polymer dispersion basis for the protection of steel components. After the coating has been applied, the film is formed by physical drying – through evaporation of the receptively contained water.
The dried polymer film, including the non-aqueous substances, remains on the coated component.

2.11 Environment and health during use

HENSOTHERM® 490 KS is a coating with extremely low emissions and is not considered to pose a health risk. Emission tests – performed in independent laboratories – have confirmed that the fire protection coating meets the requirements of various national and international emissions standards, with classification in the lowest emission class (see Section 7).

The coating does not contain any borates, plasticisers, halogens, formaldehydes or alkyl phenol ethoxylates (APEO) and is therefore free of chlorinated paraffins, Tris(2-chlorethyl)phosphate (TCEP) and Tris(2-chlorisopropyl)phosphate (TCPP).

2.12 Reference service life

According to /UL 263/, the service life of HENSOTHERM® 490 KS is unlimited when used for the intended purpose. A precondition for a long service life is that the requirements of correct handling and regular inspection of the coated surfaces are satisfied.

The information concerning service life cannot be interpreted as a guarantee given by the manufacturer, but serves as an aid towards the selection of the right product, taking account of the expected and economically reasonable service life of the building.

When the products are used according to the standard codes of practice, adverse influences through ageing are not known.

2.13 Extraordinary effects

Fire

Intumescent fire protection coatings are reactive systems which, under the influence of temperature and through a sharp increase in volume (propellant melamine – decomposition into NH3, N2, H2O and CO2), form a high-carbon insulation layer. On account of its very low thermal conductivity, the insulation layer protects the substrate from a material-destroying increase in temperature. Through the further influence of temperature, a stable, inorganic insulation layer is finally formed, consisting mainly of titanium pyrophosphate. The mode of functioning of the fire protection coating is thus irreversible.

Fire protection

Name	Value
Building material class acc. to EN 13501-1	E
Flame Spread in accordance with ASTM-E84	FSI = 0 / DSI = 0

FSI = Flame Spread Index
DSI = Smoke Development Index

Water

Applied without a cover coat, HENSOTHERM® 490 KS is a fire protection coating for dry interiors / open halls and must not be exposed to permanent rain or water.

For outdoor applications, use of the HENSOTOP 2K PU cover coat is imperative; the respective environmental requirements must be considered separately.

In the presence of water (e.g. flooding), the coating film becomes soft and shows a slight ammoniacal reaction (pH 7.6- 8.6).

No substances hazardous to water are washed out.

Mechanical destruction

To repair surface damage and surface impairments, HENSOTHERM® 490 KS viskos is available. This product is used as a repair filler.

No effects on the environment caused by unforeseen mechanical destruction are known.

2.14 Re-use phase

On account of its share of organic products, HENSOTHERM® 490 KS has a substance-inherent energy content, which can be recovered in incineration plants.

Taking account of the carbon content of the coating, the steel coated with HENSOTHERM® 490 KS can be returned to the steel recycling process.

If the fire protection coating is to be deposited separately, it meets the required standards for disposal. On account of the thermoplastic properties of the fire protection coating, the latter can be softened with a hairdryer and then mechanically removed with a scraper.

2.15 Disposal

The following waste code numbers must be taken into account:
a) Coated steel
AVV no. (recommended): 170405 Construction and demolition waste – Iron and steel

b) Solid product residue:
AVV no. (recommended): 080118 Waste from paint and varnish removal with the exception of that covered by 080117

c) Liquid product residue:
AVV no. (recommended): 080120 Aqueous suspensions containing paint and varnish with the exception of that covered by 080119

Packaging that cannot be cleaned is to be disposed of like the substance. Uncontaminated packaging can be recycled.
AVV no. (recommended): 1501025 Packaging made of plastic

2.16 Further information

Further product information is available at:
www.rudolf-hensel.de

Detailed product information on HENSOTHERM® 490 KS:
https://www.rudolf-hensel.de/490KS

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is a fire retardant by Rudolf Hensel GmbH with the designation HENSOTHERM® 490 KS, with packaging. The calculated weight is one kilogram of the fire retardant. The packaging is also included in the calculation. The following table depicts the data on the declared unit.

Declared unit

Name	Value	Unit
Declared unit	1	kg
conversion factor [Mass/Declared Unit] to 1 kg	1	-

3.2 System boundary

Type of EPD: cradle to plant gate. The following information modules are defined in this study as system boundaries:

A1 - A3 Product stage:

- A1, Raw material supply
- A2, Transport to manufacturer
- A3, Production

A total of three information modules are reviewed in order to obtain an accurate record of the indicators and environmental impact of the declared unit. Information modules A1 to A3 outline the provision of raw materials, transportation to the production facility and the actual product production process. The preliminary products are procured mainly in Germany. Transport is exclusively by truck. The following process diagram depicts the production process on which this is based.

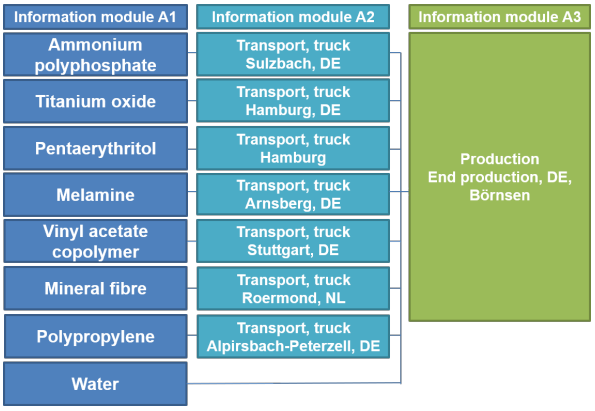

Fig: Flow chart of the production process

3.3 Estimates and assumptions

Provision of the titanium oxide material is calculated using the GLO data set: market for ilmenite, 54% titanium dioxide *ecoinvent 3.6*. As titanium oxide is regarded as a preliminary product of titanium dioxide, this data set is selected on account of its lower environmental loads compared to a conventional data set for titanium dioxide in order to appropriately depict the lower environmental loads of the preliminary product.
This is also applicable for the formula contents vinyl acetate copolymer (50% aqueous), which is shown by the dataset vinyl acetate and water. A glass fibre is assumed for calculating the mineral fibres.
Since the transportation routes are mainly within Germany, a German mixture was used as a basis for the provision of fuel.

3.4 Cut-off criteria

All of the information modules under review were included in detail in the calculation so as to comply with the requirements of *EN 15804*.
The following formula contents come under the cut-off criterion because they are far below 5% weight of the product mass: Dispersing agents (<1%), thixotropic agents (<1%) and in-can preservative (<0.25%) are not included in the calculation.
Material consumption for the Euro-pallets used for transport is less than 5% by mass on account of the fact that they are reused and therefore fall short of the cut-off criterion in the overall calculation.

3.5 Background data

The basis for the background data from the *GaBi 10* databases (SP 40), to which this study also refers, is documented in the following link:

3.6 Data quality

Specific data for 2020 from the Rudolf Hensel GmbH manufacturing plant in Börnsen, Germany was used for generating this Life Cycle Assessment. The masses of individual product components come from the information on the formula. According to the manufacturer, it can be assumed that the accuracy of this information is high.

3.7 Period under review

This LCA is based on data from 2020 which corresponds with the annual average.

3.8 Allocation

Co-products are allocated in the information modules A1-A3. The production waste incurred by injection-moulded parts and production completion in Börnsen is thermally recovered. The ensuing electric and thermal energy credits are completely charged in Module A3.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

The basis for the background data from the *GaBi 10* databases (SP 40).

4. LCA: Scenarios and additional technical information

No additional scenarios were declared for the underlying EPD.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: HENSOTHERM® 490 KS [1kg]

Parameter	Unit	A1-A3
Global warming potential	[kg CO_2-Eq.]	1.35
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6.78E-8
Acidification potential of land and water	[kg SO_2-Eq.]	3.49E-3
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	2.60E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	3.72E-4
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	1.69E-5
Abiotic depletion potential for fossil resources	[MJ]	25.77

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: HENSOTHERM® 490 KS [1kg]

Parameter	Unit	A1-A3
Renewable primary energy as energy carrier	[MJ]	1.75
Renewable primary energy resources as material utilization	[MJ]	0.00
Total use of renewable primary energy resources	[MJ]	1.75
Non-renewable primary energy as energy carrier	[MJ]	15.89
Non-renewable primary energy as material utilization	[MJ]	11.12
Total use of non-renewable primary energy resources	[MJ]	27.01
Use of secondary material	[kg]	0.00
Use of renewable secondary fuels	[MJ]	0.00
Use of non-renewable secondary fuels	[MJ]	0.00
Use of net fresh water	[m^3]	0.01

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: HENSOTHERM® 490 KS [1kg]

Parameter	Unit	A1-A3
Hazardous waste disposed	[kg]	2.86E-8
Non-hazardous waste disposed	[kg]	1.58E-2
Radioactive waste disposed	[kg]	2.54E-4
Components for re-use	[kg]	0.00
Materials for recycling	[kg]	0.00
Materials for energy recovery	[kg]	0.00
Exported electrical energy	[MJ]	0.00
Exported thermal energy	[MJ]	0.00

All indicators are collected in accordance with *EN 15804+A1*. The estimated impact of environmental impacts is in accordance with *CML 2001 Apr. 2015*.

6. LCA: Interpretation

The dominance analysis indicates that the main causes of environmental impacts and indicators can be found in information module A1. This depicts the global warming potential as accounting for approx. 88% for the provision of materials, in terms of all information modules.

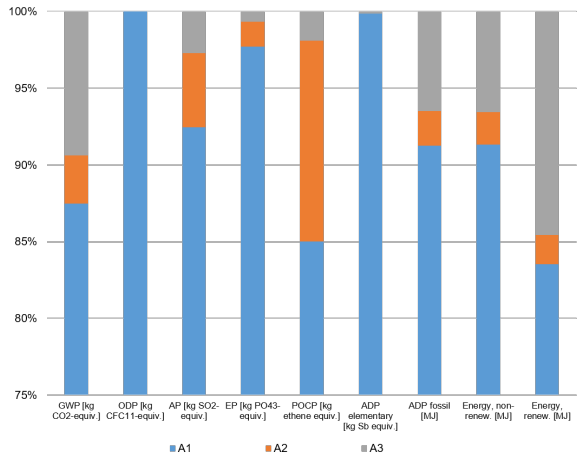

Fig.: Dominance analysis information modules A1 to A3

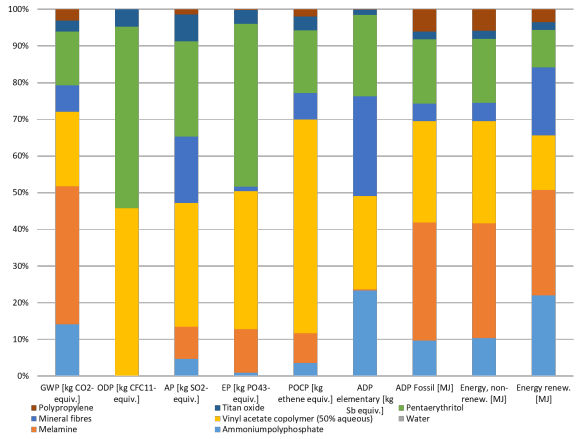

Fig.: Dominance analysis information module A1

If we look at the material provision for the fire retardant HENSOTHERM® 490 KS in detail, it becomes clear that four raw materials make a decisive contribution to the environmental impacts and indicators in question. The material provision of the melamine accounts for approx. 38% of the global warming potential. The vinyl acetate copolymer accounts for approx. 20%, pentaerythritol for approx. 15% and ammonium polyphosphate approx. 14% of greenhouse gas emissions.

The masses of individual product components come from the information on the formula. According to the manufacturer, it can be assumed that the accuracy of this information is high.

The relevant data sets that were used to calculate the material provision of the product are absolutely up to date (DE: melamine, *GaBi 10*, year: 2019; GLO: vinyl acetate, *ecoinvent 3.6*, year: 2019; GLO: Pentaerythritol, *ecoinvent 3.6*, year: 2019; EU-28: ammonium polyphosphate, *GaBi 10*, year: 2019).

As these data sets have a strong influence on the results – as indicated by the dominance analysis – the same also applies for the overall calculation.

7. Requisite evidence

VOC emissions

Name	Value	Unit
TVOC (C6 - C16)	940	µg/m³
Sum SVOC (C16 - C22)	<5	µg/m³
R (dimensionless)	<1	-
VOC without NIK	<5	µg/m³
Carcinogenic Substances	<1	µg/m³
LEED v4.1 overview of results	-	
CMR-VOC (14 days)	not verifiable	µg/m³
TVOC (12 days)	56	µg/m³
R (dimensionless) (14 days)	0,19	
SVOC (14 days)	not verifiable	µg/m³
Formaldehyde (12 days)	<2	µg/m³
Acetaldehyde (14 days)	2	µg/m³
Carbon disulphide CS2 (14 days)	<1	µg/m³

Test reports

a) *Eurofins Product Testing A/S - Report No. 392-2014-00177802Brev1 of 3 March 2015*
The *AgBB* test was carried out with 100% of the maximum permissible applied quantity, in accordance with *UL 263*.

b) *eco Institut - Test Report No. C54754-002 of 10 December 2019*
The *LEEDv4.1* test was carried out with 50% of the maximum approved application volume for closed steel profiles in accordance with *UL 263*.

HENSOTHERM® 490 KS meets
(a) the requirements for VOC product emissions according to the California Department of Public Health (*CDPH*) Standard Method v1.1-2017 (California Specification 01350 (01/2017) and
(b) the requirement for VOC content according to *ASTM D 2369-10* and South Coast Air Quality Management District (*SCAQMD*) Rule 1113.
These criteria meet the requirements on low-emission paints and coatings in the “credit EQc2” system of the *LEED v4* and *LEED v4.1* assessment systems.

8. References

IBU 2021
IBU (2021): General EPD programme instructions of Institut Bauen und Umwelt e.V. (IBU), version 2.0, Institut Bauen und Umwelt e.V., Berlin

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and

declarations – Type III environmental declarations – Principles and processes

EN 15804+A1
EN 15804:2012-04+A1: 2013, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

PCR, Part A
Product Category Rules for building products and services – Calculation rules for the Life Cycle Assessment and requirements on the Background Report V2.0, Institut Bauen und Umwelt e.V., 2021

PCR, Part B
Product category guidelines for building-related products and services, Part B: Requirements on the Environmental Product Declaration for coatings with organic binding agents, version 1.6, Berlin: Institut Bauen und Umwelt e.V. (pub.),30.11.2017

GaBi 10
GaBi 10 software Comprehensive analysis Leinfelden-Echterdingen: Sphera Solution GmbH (pub.) http://www.gabi-software.com/deutsch/index/ (1 June 2021)

CML 2001 April 2015
Indicators for environmental impacts Leiden: Leiden University (pub.) http://cml.leiden.edu/software/data-cmlia.html#downloads (1 June 2021)

ecoinvent 3.6
Background database: ecoinvent 3.6 Zurich: ecoinvent (pub.) http://www.ecoinvent.org (1 June 2021)

/REACH Directive, (EC/1907/2006) Annex XVII/
(EC) Directive 1907/2006 of the European Parliament and Council dated 18 December 2006 (REACH Directive) – Restrictions Official Gazette no. L396/396-851 dated 30 December 2006

ECHA candidate list
European Chemical Agency (ECHA), candidate list: Candidate List of Substances of Very High Concern for Authorisation (published in accordance with Article 59(10) of the REACH Regulation)

EN13501-1
EN13501-1:2010, Classification of construction products and methods by fire performance – Part 1: Classification with the results of tests on reaction to fire of construction products

ISO 11890-2
ISO 11890-2:2013, Paints and varnishes, Determination of volatile organic compound (VOC) content – Part 2: Gas-chromatographic method

ASTM E84 - 15b
ASTM E84 - 15b: 15 December 2015, Standard test method for surface burning characteristics of building materials

UL 263
UL 263:2011, Standard for fire tests of building construction and materials

ISO 16000-3
ISO 16000-3:2011, Indoor air -- Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air -- Active sampling method

ISO 16000-6
ISO 16000-6:2011, Indoor air -- Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID

ISO 16000-9
ISO 16000-9: 2006, Indoor air -- Part 9: Determination of the emission of volatile organic compounds from building products and furnishing -- Emission test chamber method

ISO 16000-11
ISO 16000-11:2006, Indoor air -- Part 11: Determination of the emission of volatile organic compounds from building products and furnishing -- Sampling, storage of samples and preparation of test specimens

AgBB
AgBB Ausschuss zur gesundheitlichen Bewertung von Bauprodukten (Committee for Health-related Evaluation of Building Products, AgBB): Evaluation scheme for VOC emissions from building products suitable for indoor use (2012)

Approval guidelines for the health-related evaluation of indoor construction products
(DIBt publications 10/2010) in conjunction with the LCI values of the AgBB in the version dated June 2012

DEVP0908633A
French Directive DEVP0908633A of 30 April 2009

DEVP0910046A
French Directive DEVP0910046A of 28 May 2009

Royal Decree for determining the limit values for indoor emissions by construction products for certain intended types of use
Draft of December 2012: KINGDOM OF BELGIUM - Federal Public Service, Health, Safety of the Food Chain and Environment

LEED
Leadership in Energy and Environmental Design (LEED)

LEED credit EQ c4.2 – Low Emitting Materials – Paint and Coatings (2009)
LEEDv4 and LEEDv4.1 credit EQc2 – Low-emitting paint and coating materials in conjunction with VOC product emissions acc. to

CDPH
VOC product emissions acc. to California Department of Public Health (CDPH) Standard Method v1.1-2010 (California Specification 01350 (02/2010)) and

ASTM D2369-10
VOC content ASTM D2369-0: (2015) e1, Standard test method for volatile content of coatings and

SCAQMD
South Coast Air Management District (SCAQMD) Rule 1113 – Architectural Coatings – amended 5 February 2016

AVV
Ordinance governing the European Waste Catalogue (List of wastes – AVV) – Issue date: 10 December 2001

Eurofins Product Testing A/S

Report no. 392-2014-00177802Brev1 dated 3 March 2015

eco Institut
Test Report no. C54754-001 dated 10 December 2019

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